

September 14, 2001

**AT&T PROPRIETARY**

WHAT IS CLAIMED IS:

- 1        1. A method for maintaining performance of a network having at least one  
2 element, comprising the steps of:
  - 3              periodically monitoring at least one attribute of the one network element at  
4 successive first intervals;
  - 5              comparing each monitored attribute obtained during each successive first interval  
6 to a corresponding threshold associated with the attribute to establish an historical trend  
7 for each network element;
  - 8              determining, from the historical trend associated with each of monitored element  
9 if there exists at least one critical attribute of each monitored elements that warrants  
10 closer scrutiny, and if so;
  - 11             periodically monitoring the at least one critical attribute during successive second  
12 intervals, each shorter than each said first interval, to determine whether the each  
13 monitored element exhibits persistent performance degradation.
- 1        2. The method according to claim 1 further including the step of altering the  
2 one monitored network exhibiting persistent performance degradation to ameliorate the  
3 degradation.
- 1        3. The method according to claim 1 further including the steps of:
  - 2              monitoring each network element that exhibits persistent performance degradation  
3 in real time at successive third intervals that are shorter than the successive second  
4 intervals.
- 1        4. The method according to claim 1 wherein each successive first interval is  
2 a week in length.
- 1        5. The method according to claim 1 wherein each successive first interval is  
2 one day in length.

**AT&T PROPRIETARY**

1           6.       The method according to claim 1 wherein each successive first interval is  
2       one hour in length.

1           7.       The method according to claim 1 wherein each successive second interval  
2       is ten minutes in length.

1           8.       A method for maintaining performance of a network having at least one  
2       element, comprising the steps of:

3                 periodically monitoring at least one attribute of the one network element at  
4       successive first intervals, said one attributed determined from a failure model for said one  
5       network element;

6                 comparing each monitored attribute obtained during each successive first interval  
7       to a corresponding threshold associated with the attribute to establish an historical trend  
8       for each network element;

9                 determining, from the historical trend associated with each of monitored element  
10      if there exists at least one critical attribute of one of said monitored elements that  
11      warrants closer scrutiny, and if so;

12                 periodically monitoring at least one critical attribute during successive  
13      second intervals, each shorter than each said first interval, to determine whether said  
14      monitored element exhibits persistent performance degradation.

1           9.       The method according to claim 8 further including the steps of:  
2                 monitoring each network element that exhibits persistent performance degradation  
3       in real time at successive third intervals that are shorter than the successive second  
4       intervals.

1           10.      The method according to claim 8 wherein each successive first interval is  
2       a week in length.

September 14, 2001

AT&T PROPRIETARY

1           **11.**   The method according to claim 8 wherein each successive first interval is  
2   one day in length.

1           **12.**   The method according to claim 8 wherein each successive first interval is  
2   one hour in length.

1           **13.**   The method according to claim 8 wherein each successive second interval  
2   is ten minutes in length.

1           **14.**   The method according to claim 8 further including the step of determining  
2   from the failure mode of the monitored element which if any additional attributes require  
3   monitoring upon detecting a performance degradation.